IOT BASED HEALTH MONITORING SYSTEM

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ABSTRACT

In India, near about 20% of the total population loses their lives due to intermittent health monitoring system i.e. in most of the hospitals, doctor visits patients in fix time either in morning shift or in evening shift or in both shifts. What happens if patient's health becomes critical in between that time or when a doctor is not available to treat patient. By which a patient may lose their life. So to avoid this grave situation; we are proposing a smart embedded system device which monitors patients health uninterruptedly. This system monitors patients heart rate, body temperature and saline liquid level (if any).if any of the above parameters goes beyond the Yonder value, this smart device informs doctors or care taker and ask for remedial actions to save patients life.

Keyword: - *IoT, Android, Heartbeat, Mobile Application, Sensors, Health Monitoring.*

1. INTRODUCTION:

Now-a-days, the medical electronics-sensors (E-sensors) are playing an significant role in health care centres. The patient electronics-health (E-health) monitoring is one of the major progresses in research field. Here we use the temperature sensor, heartbeat sensor and ECG sensor to observe the patient's body temperature, pulse and heart rate respectively[1].

Hence like the use of thermometer in home to check body temperature before doctor's discussion, this proposed model (devices) can be used to check the patient's health condition in home as first aid information to the concerned patient otherwise nowadays consulting doctors or going to diagnosis centres become very costly in terms of financial aspect[3].

To overcome this situation, we describe the design of a microcontroller based advanced performance integrated health portable monitoring system. Like one limit say Heart rate of the patient is measured by placing the index finger on IRD (InfraRed Device) sensor and the pulse rate is then measured and displayed on LCD. The device sends messages when the parameter value exceeds the provided cut-off value[1].

This cut-off value or yonder is given by the programmer during coding of the LPC2148. The standard heart beat ranges among 60100 pulses/min and standard temperature ranges between 18°C to 38°C. The Heart Rate, ECG, Brain tumour and the Body Temperature information is then sent to the authorized person[2].

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OBJECTIVES:

- To monitor the status or condition of the patient.
- To increase system efficiency, the online system is preferred.
- To build up a system fit for observing vital body signs, for example, body temperature, heart rate, pulse rate.

2. LITERATURE SURVEY:

A portable physiological checking framework is displayed, which can continuously screen the patient's heartbeat, temperature and other basic parameters of the room. We proposed a continuously checking and control instrument to screen the patient condition and store the patient information's in server based remote correspondence. A remote health monitoring system using IoT is projected where the authorized personal can access these stored data using any IoT platform and based on these values received, the diseases are identified by the doctors from a distance.

A BCI allows its target users like persons with motor incapacities to act on their environment using brain signals without using marginal nerves or muscles. In this review paper, we have presented a opinion on different BCIs for humans with motor disabilities. A Brain-Computer Interface (BCI) is a communication medium, which reorganizes brain signals into respective commands for an external device.

The sEMG signals are exhibited using Cascade Forward Back propagation Neural Network (CFBNN) and Pattern Recognition Neural Network. Methods sEMG signals generated from prime muscles of the participants are composed through an sEMG acquisition system. Based on the sEMG signals, the type of movement attempted by the user is recognized in the sEMG recognition module using signal processing, feature extraction and machine learning techniques. The information about the recognized movement is passed to microcontroller wherein a control is developed to command the prosthetic hand to emulate the identified movement.

4. PROPOSED SYSTEM:

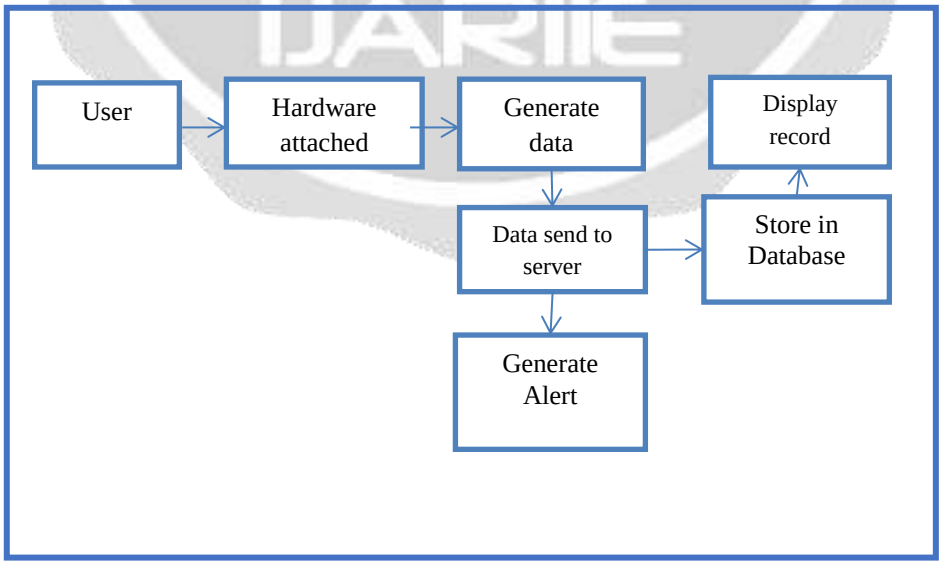

Fig.1. Class Diagram

Application:

Mainly in this system the hardware sensor will place on human body which scan the human body and the result will reflect on the display and also sends to the server will check the threshold level and stores in data base if the range of the result is above threshold level it will create alert and send notification to close once and displays nearest hospital locations.

Hardware:

Heartbeat Sensor:

Fig.2. Heartbeat Sensor

The heartbeat sensor is based on the principle of photo plethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (a vascular region). In case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important. The flow of blood volume is decided by the rate of heart pulses and since light is absorbed by blood, the signal pulses are equivalent to the heart beat pulses. There are two types of photo plethysmography: Transmission: Light emitted from the light emitting device is transmitted through any vascular region of the body like earlobe and received by the detector. Reflection: Light emitted from the light emitting device is reflected by the regions.

Temperature Sensor:

Fig.3. **Temperature Sensor**

This is a 1 Meter Long Waterproof, sealed and pre-wired digital temperature sensor probe based on DS18B20 sensor. It is very handy for when you need to measure something far away, or in wet conditions. Because they are digital, you don't get any signal degradation even over long distance.

These 1-wire digital temperature sensors are fairly precise (±0.5°C over much of the range) and can give up to 12 bits of precision from the onboard digital-to-analog converter. They work great with any microcontroller using a single digital pin, and you can even connect multiple ones to the same pin, each one has a unique 64-bit ID burned in at the factory to differentiate them. Usable with 3.0-5.0V systems.

The only downside is they use the Dallas 1-Wire protocol, which is somewhat complex, and requires a bunch of code to parse out the communication. When using with microcontroller put a 4.7k resistor to sensing pin, which is required as a pullup from the DATA to VCC line.

Database:

To develop this Application we are using FIREBASE database which is use to store the record of patients by which doctor gets help to treat the patient more conveniently and by storing the data into database also help in future treatement.

Success Conditions:

Proper inputs will provide proper output.

Failure Conditions:

Internet Connection.

5. ADVANTAGES & DISADVANTAGES

Advantages:

To prevent the patient from getting harmed and protect their lives.
To reduce the time.
To provide continue monitoring
To provide real-time alerts
Reduce stress

Disadvantages:

Require proper hardware embedding

Application:

Hospitals
OPD.

6. CONCLUSION:

To implement Arduino UNO and Wireless Based Wireless Health monitoring system is the enhanced technology as compare to the existing technology because it sends the SMS quickly, easy to use, also it can work in longer distances at a very low cost. It sends measured heart rate (heart beat), body temperature and saline level to the doctor so if any critical situation happens in patient's biomedical parameters then doctors can easily take action.

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